

REMARKS/ARGUMENTS

The Office Action of August 12, 2003, has been carefully considered.

It is noted that claims 1-4, 6 and 10 are rejected under 35 U.S.C. §112, second paragraph.

Claims 1-4, 6 and 10 are rejected under 35 U.S.C. §102(b) over the patent to Hayes.

Claims 1, 2, 4, 6 and 10 are rejected under 35 U.S.C. §102(b) over the patent to Jarvik.

Claims 1-4, 6 and 10 are rejected under 35 U.S.C. §103(a) over the patent to Davidson in view of the patent to McLean.

Claims 1-4, 6 and 10 are rejected under 35 U.S.C. §103(a) over the patent to Gao in view of McLean.

Furthermore, the claims and disclosure are objected to for containing various informalities.

In connection with the Examiner's objection to the disclosure because the regulator 43 mentioned on page 13, line 12 is not included in Figure 8, Applicant respectfully submits that the regulator 43 is illustrated in original Figure 15. Figure 15 schematically illustrates the regulating mechanism 30 in greater detail. Applicant has amended page 13, line 12 of the specification to indicate that the regulator 43 is shown in Figure 15. Due to the much smaller scale of the illustration of the regulating mechanism 30 in Figure 8, it is not possible to clearly show all of the components contained in the regulating mechanism 30. These components are instead shown in Figure 15.

In view of these considerations, it is respectfully submitted that the objection to the disclosure is overcome and should be withdrawn.

In view of the Examiner's rejections of and objections to the claims, Applicant has amended claims 1-4, 6 and 10 and added new dependent claim 24.

The claims have been amended to remove reference numerals and claim 3 has been amended to provide a period at the end of the sentence. In view of these considerations, it is respectfully submitted that the objections to the claims are overcome and should be withdrawn.

It is respectfully submitted that the claims now on file particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Applicant has amended the claims to address the instances of indefiniteness cited by the Examiner. Furthermore,

Applicant has added new dependent claim 24 which recites the alternative structure which was deleted from claim 4.

In view of these considerations, it is respectfully submitted that the rejection of claims 1-4, 6 and 10 under 35 U.S.C. §112, second paragraph, is overcome and should be withdrawn.

It is further respectfully submitted that the claims presently on file differ essentially and in an unobvious, highly advantageous manner from the constructions disclosed in the references.

The patent Hayes et al. discloses a primary fluid actuated, secondary fluid propelling system.

The patent to Jarvik discloses total artificial hearts and cardiac assist devices powered and controlled by reversible electro hydraulic energy converters.

The patent to Davidson discloses cardiovascular implants of enhanced bio compatibility.

The patent to Gao discloses an artificial heart.

All of these references teach hydraulic pumps which are provided to assist a weak heart. The mechanisms of each of these references are essentially the same and the following applies.

1. Blood is let into some type of pump housing from a location upstream of the weak part of the heart (in the direction of the flow of blood through the heart);
2. The pump housing is actuated by some type of electric or pneumatic motor whereby the pump housing is emptied of its content (blood) delivered after the weak part of the heart;
3. Unidirectionally working valves guarantee that blood runs in the correct direction in an antigrade fashion; and
4. Energy is added to the circulation from some type of battery pack via the motor that drives the hydraulic pump.

Contrary to these references, the presently claimed invention deals with a device having a hydraulic motor. A hydraulic pump is a device that can make fluid flow from one point to another point by adding energy to the pump mechanism from an external source. In contrast, a hydraulic motor is a device that can convert the potential energy of the fluid set under pressure to kinetic energy. This is done by directing the fluid from a first point, where the pressure is high, to a second point where the pressure is lower. The design of such a pump may of course vary, but the conversion of the energy is always the same. Therefore, a hydraulic pump and a hydraulic motor are completely opposite concepts. The pump needs energy from an external

source to exert its work on the fluid, whereas the motor utilizes energy from the fluid to create some type of mechanics.

The presently claimed invention is a hydraulic motor which brings pressurized blood from the heart into a cylinder thereby making a movement of a piston possible, and lets the blood return to the same compartment of the heart at a lower pressure. Energy is tapped from the heart, not given to the heart. By connecting the hydraulic motor to a second cylinder, as shown in Figure 8 of the present application, energy is transferred from the heart to the blood of the descending aorta later in each heart cycle. For a number of reasons as described in the specification of the present application, this is better for the organism than conventional circulation of the blood.

The present invention provides a specific device which utilizes a hydraulic motor for circulating blood which is completely different from the teachings of the references mentioned above.

In view of these considerations, it is respectfully submitted that the rejection of claims 1-4, 6 and 10 under 35 U.S.C. §102(b) over Hayes et al. and the rejection of claims 1, 2, 4, 6 and 10 under 35 U.S.C. §102(b) over Jarvik, are overcome and should be withdrawn.

The patent to McLean discloses a biologically implantable and energized power supply. This device can tap energy from the contractions of the heart and convert it and store it in a battery pack. The energy is later used to run a pacemaker. This device is a hydraulic motor connected to an electric generator. An important difference between McLean and the present invention is that in the present invention, the energy tapped from the heart is transferred to the fluid for circulation. In McLean, on the other hand, the energy is used for running a pacemaker, which although is useful and may influence the person positively, the energy is finally lost as heat without influencing the circulation per se. The Examiner combined McLean with either Davidson or Gao in determining that claims 1-4, 6 and 10 would be unpatentable over such a combination. Applicant respectfully submits that since neither Davidson nor Gao teaches a hydraulic motor and further more since McLean only teaches using energy for running a pacemaker, it is respectfully submitted that the combinations relied upon by the Examiner do not teach a device in which pressurized blood is brought from the heart into a cylinder thereby making movement of a piston possible and then the blood is returned to the same compartment of the heart at a lower pressure, whereby energy is tapped from the heart and the energy is

transferred from the heart to the blood of the descending aorta later in each heart cycle. There is no teaching of such a construction by the references cited by the Examiner taken either alone or in combination.

In view of these considerations, it is respectfully submitted that the rejections of claims 1-4, 6 and 10 under 35 U.S.C. §103(a) over a combination of Davidson and McLean or Gao and McLean is overcome and should be withdrawn.

Reconsideration and allowance of the present application are respectfully requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on November 12, 2003:

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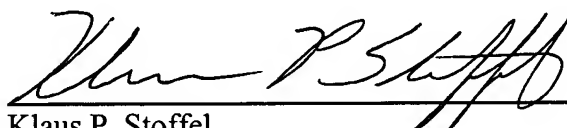
Name of applicant, assignee or
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Signature

November 12, 2003

Date of Signature

Respectfully submitted,



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